Title

ICARUS (Imaging Cosmic And Rare Underground Signals)
ICANOE (ICARUS for a Neutrino Oscillation Experiment)

Physics Goals

*Far detector for CERN □ beam: confirm/measure atmospheric oscillation parameters (T600 statistics limited) sensitive to sin^2(2□_{13}) > 2*10^{-2} (5yrs T3000). Atmospheric □s: about 70 □-like, 40 e-like, 50 NC events/yr per 500 ton volume without oscillation. Solar □s: sensitive only to 8B flux. Proton decay: competitive for higher multiplicity (3-4) channels, lifetime limit to 10^32yr, with multi-kton detector to 10^34.*

Features

Liquid argon TPC provides 3d imaging and calorimetry of ionizing particles. Each TPC is formed by three parallel plane of wires, 3mm apart, oriented at 0,+60,-60 degrees. Particle identification from dE/dx.

Technological Challenges

Cryogenics, liquid Argon purification

LBNL Contribution and Interest

none

Status

First T600 module installed (tested above ground in 2001); proposal for T3000
Goal is to reach 5000 ton volume

Timeline

Construction of 600-ton detector completed, final assembly and operation start-up at Gran Sasso expected by early 2003, T3000 expected to be operational by 2006.

Location

Gran Sasso Laboratory

Collaboration

Near 100; from Italy (Milano, Pavia), Poland, China, Switzerland (ETH), USA (UCLA)

Funding Sources

INFN (+others?)

Resources, Links, and References

http://pcnometh4.cern.ch/, http://www.lngs.infn.it/site/exppro/icarus/icarus.html

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